

WHAT IS CLAIMED IS:

1. An electrical capacitance sapphire diaphragm pressure sensor, comprising:

a pressure-sensing element having a pressure-receiving part with a deposition electrode formed on each of the opposing surfaces of sapphire diaphragms which are provided in opposing relation to each other, and a securing part with a metal deposited on a portion of the surface of each of the sapphire diaphragms;

a metal base for securing the pressure-sensing element at its securing part;

a conductive sealing agent for sealing a gap between said securing part with a deposited metal and said metal base; and

a nickel protective layer for protecting at least said conductive sealing agent from a medium whose pressure is to be measured;

whereby a measured pressure of the medium is transferred to said pressure-receiving part, and the resulting variations in a distance between the deposition electrodes formed on the opposing faces of the sapphire diaphragms cause a change in capacitance.

2. The sapphire diaphragm pressure sensor as defined in Claim 1, wherein said pressure-sensing element is formed as a strip-shaped element.

3. The sapphire diaphragm pressure sensor as defined in Claim 1, wherein said pressure-sensing element is formed as a rectangular plate element.

4. The sapphire diaphragm pressure sensor as defined in Claim 1, wherein any metal selected from metals having strong ionization tendency such as tin, copper, silver, gold or the like is deposited on said securing part of said pressure-sensing element.

5. The sapphire diaphragm pressure sensor as defined in Claim 1, wherein said conductive sealing agent is a silver paint or adhesive containing silver particles.

6. The sapphire diaphragm pressure sensor as defined in Claim 1, further provided with a metal outer cylinder for guiding a fluid whose pressure is to be measured, to said pressure receiving part of the pressure sensing element.

7. A method of fabricating an electrical capacitance sapphire diaphragm pressure sensor for sensing a pressure of a fluid, comprising the steps of:

providing sapphire diaphragms in opposing relation and forming a deposition electrode on each of the opposing surfaces of said diaphragms to thereby form a pressure-receiving part of a pressure-sensing element;

preparing a metal base for securing said pressure sensing element;

depositing a metal on a securing part of said pressure sensing element which is secured on said metal base;

fixing said pressure sensing element, at least partially, to said metal part by means of a thermosetting epoxy resin;

sealing a contact area between said securing part on

which a metal is deposited and said metal base by means of a conductive sealing agent on the pressure receiving part side of said pressure sensing element;

covering with a silicon resin the pressure-sensing element and metal base excepting, at least, a portion sealed with the conductive sealing agent;

forming a nickel protective layer on said sealed portion not covered with the silicon resin by means of electro-casting using a nickel; and

stripping off said silicon resin while retaining the nickel protective layer formed by means of electro-casting.

8. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, wherein said pressure-sensing element is formed as a strip-shaped element.

9. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, wherein said pressure-sensing element is formed as a rectangular plate-shaped element.

10. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, wherein a metal selected from a group of metals having strong ionization tendency such as tin, copper, silver, gold or the like is deposited on said securing part of said pressure-sensing element.

11. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, wherein said conductive sealing agent is a silver paint or

adhesive containing silver particles.

12. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, further comprising a step of immersing said nickel protective layer in concentrated nitric acid to thereby form a passive state film resistant to a strong acid liquid on the surface of the nickel.

13. The method of fabricating an electrical capacitance sapphire diaphragm pressure sensor as defined in Claim 7, further comprising a step of forming a metal outer cylinder for guiding a fluid whose pressure is to be measured to said pressure-receiving part of the pressure-sensing element.